LF213-15 Virology

26/27

Department
Life Sciences
Level
Undergraduate Level 2
Module leader
Jeremy Keown
Credit value
15
Module duration
5 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This module covers the replication strategies of important viruses, the diseases these viruses cause, antiviral therapies, diagnosis and vaccination. Viral replication strategies, how viruses reproduce inside our cells, are the cornerstone of all virology. Molecular knowledge of how a particular virus replicates allows the development of methods of diagnosis, prevention and treatment of disease. These aspects of virology, along with how human viruses emerge and evolve, will be taught within the context of pandemic viruses such as influenza, HIV and coronaviruses.

Module aims

The aim of the module is to explain the biology of important viruses, how they emerge and evolve, how they may be diagnosed, prevented through vaccination, and treated with antiviral therapies.

The primary aim of the laboratory is to provide students with an understanding of techniques relevant to the study of virology and also of animal cell tissue culture systems, which are fundamental to the analysis of animal viruses as well as some bacterial pathogens. The work is intended to emphasise the novel nature of the replication cycle of viruses, focusing on mammalian viruses. The work is additionally designed to reinforce and extend information and experience gained in previous lectures and laboratory classes.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

This module introduces the fundamental principles of virology, exploring how viruses replicate, evolve, and interact with their hosts. Understanding viruses is critical for public health, as they cause significant human diseases and shape global health responses. The course examines key viral pathogens, including influenza, HIV, and coronaviruses, to illustrate diverse replication strategies, immune evasion mechanisms, and the emergence of new viral threats. It also explores how viral infections are diagnosed, prevented through vaccination, and treated with antiviral therapies. A strong emphasis is placed on the molecular and evolutionary principles underlying virus adaptation and disease progression. In addition to theoretical knowledge, students will develop practical skills in mammalian cell culture, virus infectivity assays, and data analysis.

Learning outcomes

By the end of the module, students should be able to:

- Explain how viruses evade the immune system and adapt within populations.
- Compare the replication strategies of key viruses and their implications.
- Describe methods for diagnosing viral infections and developing vaccines and antiviral therapies.
- Perform aseptic mammalian cell culture and viral infectivity assays.
- Analyse virus growth data and interpret results.

Indicative reading list

Reading lists can be found in Talis

Subject specific skills

Understand the replication strategies of selected important viruses and the similarities and differences between them. Understand how human viruses can emerge from animals and how they evolve in a population. Understand how virus infections can be diagnosed, how vaccines are developed and used to prevent viral infection and disease. Understand different types of antiviral therapy, how they are discovered, developed and trialled.

Transferable skills

Adult learning,
self directed learning,
team based learning
quantitative skills

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (10%)
Practical classes	3 sessions of 5 hours (10%)
Private study	116 hours 30 minutes (77%)
Assessment	3 hours 30 minutes (2%)
Total	150 hours

Private study description

116.5 hrs of self-directed learning and revision

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D3

	Weighting	Study time	Eligible for self-certification
In-class assignment Virology lab	30%	2 hours	No
Closed-book end-of-year examination	70%	1 hour 30 minutes	No

In-person locally-timetabled closed-book end-of-year examination

Assessment group R3

	Weighting	Study time	Eligible for self-certification
Closed-book computer-based examination	100%		No

In-person locally-timetabled closed-book computer-based xamination

Feedback on assessment

lab - individual written feedback
exam - cohort written feedback

Past exam papers for LF213

Availability

Courses

This module is Optional for:

- UBSA-3 Undergraduate Biological Sciences
  - Year 2 of C100 Biological Sciences
  - Year 2 of C100 Biological Sciences
  - Year 2 of C102 Biological Sciences with Cell Biology
  - Year 2 of C103 Biological Sciences with Environmental Resources
  - Year 2 of C104 Biological Sciences with Microbiology
  - Year 2 of C105 Biological Sciences with Molecular Genetics
  - Year 2 of C107 Biological Sciences with Virology
- Year 2 of ULFA-C1A1 Undergraduate Biological Sciences (MBio)
- Year 2 of ULFA-C113 Undergraduate Biological Sciences (with Placement Year)
- Year 2 of ULFA-C1A5 Undergraduate Biological Sciences with Industrial Placement (MBio)
- UBSA-C1B9 Undergraduate Biomedical Science
  - Year 2 of C1B9 Biomedical Science
  - Year 2 of C1B9 Biomedical Science
  - Year 2 of C1B9 Biomedical Science
- ULFA-C1A3 Undergraduate Biomedical Science (MBio)
  - Year 2 of C1A3 Biomedical Science
  - Year 2 of C1B9 Biomedical Science
- Year 2 of ULFA-C1A7 Undergraduate Biomedical Science with Industrial Placement (MBio)
- ULFA-CB18 Undergraduate Biomedical Science with Placement Year
  - Year 2 of CB18 Biomedical Science with Placement Year
  - Year 2 of CB18 Biomedical Science with Placement Year
  - Year 2 of CB18 Biomedical Science with Placement Year
- Year 2 of ULFA-B140 Undergraduate Neuroscience (BSc)
- Year 2 of ULFA-B142 Undergraduate Neuroscience (MBio)
- Year 2 of ULFA-B143 Undergraduate Neuroscience (with Industrial Placement) (MBio)
- Year 2 of ULFA-B141 Undergraduate Neuroscience (with Placement Year) (BSc)